

PATENT SPECIFICATION

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DRAWINGS ATTACHED.

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COMPLETE SPECIFICATION.

Improvements relating to Chairs and Stools.

- We, HARRIS & SHELTON (DISPLAY) LIMITED, a British Company of 45, College Road, Perry Bar, Birmingham 22, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—
- This invention relates to chairs and stools of the kind having a seat mounted on a stand for swivelling movement about an axis which is vertical when the stand is on a horizontal surface.
- Chairs and stools are often lifted by the seat to move them about and with most known chairs and stools having a swivelling seat, when so lifted the stand of the chair or stool is free to swivel with respect to the seat. Where the stand is of asymmetric form there is greater tendency for it to swivel when lifted and this makes manoeuvring of the chair or stool awkward and may lead to personal injury.
- The present invention consists in a chair or stool which has a seat mounted on a stand for swivelling movement about an axis which is vertical when the stand is on a horizontal surface, the stand being of asymmetric form at least about the vertical axis and provided with restraining means for at least resisting relative swivelling movement between the seat and stand and operative when the chair or stool is lifted by the seat but not operative when downward pressure is exerted on the seat in use.
- The present invention further consists in a chair or stool which has a seat swivelly mounted on a stand whose centre of gravity is offset with respect to the swivel axis and which is provided with restraining means for at least resisting relative swivelling movement between the seat and stand and operative when the chair or stool is lifted by the seat but not operative when downward pressure is exerted on the seat in use.
- The restraining means preferably comprise clutch elements on the seat and stand, which elements are separated axially when the chair or stool is in use but are arranged to be engaged by relative axial movement with respect to one another of the seat and stand as, for example, when the chair or stool is lifted by the seat.
- The clutch elements may comprise components which act in effect in the manner of a dog clutch. One component may be a radial pin or screw on the seat or stand which is interengageable with sockets or recesses in the stand or seat or a member such as a sleeve or collar on the stand or seat. Alternatively the components may be formed by members having opposed skirt or flange portions which are interengageable to restrain relative swivelling movement between the seat and stand. As a further alternative, one of the components may comprise a socket of square hexagonal or other non-circular cross section with which a complementarily shaped spigot portion of the other component is axially engageable.
- The clutch elements may be arranged so that they are normally separated and only move into engagement when the chair or stool is lifted by the seat to move the chair or stool. Alternatively they may normally be engaged, for example, by light spring loading, and be separated to allow the seat to swivel only when the seat is depressed, for example, by being sat upon.
- The invention may be applied to chairs or

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stools having a seat which is adjustable or non-adjustable in height. In a non-adjustable chair or stool in which the seat is rigidly mounted on a plain cylindrical shaft which swivels about its axis in an upright tube of the stand, the shaft may move axially with respect to the tube to some extent when the seat is lifted so that the clutch elements provided on the shaft and tube interengage. In an adjustable chair or stool in which, for example, the seat has a screw-threaded shaft engaging a nut on the stand, the clutch elements may be carried by the tube and by a member rotatable with, but axially movable of, the shaft which slides axially in the tube when the seat is lifted to cause the clutch elements to be interengaged. Alternatively the upright support of the stand may be of telescopic, tubular construction arranged so that the upright is adjustable in height, the shaft, to which the seat is rigidly secured, being swivelly mounted in the upper section of the telescopic pillar and axially moveable to some extent with respect to the upper section of the pillar when the seat is lifted so that the clutch elements provided on the shaft and the upper section of the pillar interengage.

Embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:—

Figure 1 is an exploded perspective view of a shoe fitting stool according to the invention;

Figure 2 is a sectional view of part of the stool shown in Figure 1; and

Figure 3 is a sectional view, similar to Figure 2, of an alternative mounting for a stool whose seat is adjustable in height.

The stool has a stand 10 comprising an upright tube 11 from the bottom of which extend radially at equal angular spacings apart two legs 12 and a horizontally extending bar 13. The two legs 12 incline downwards slightly from the tube 11 and are each fitted with an adjustable foot 14 at their outer ends. The horizontally extending bar 13 is longer than the two legs 12 and is secured at its outer end to an upright cylindrical post 15 at an intermediate part of the length of the post 15. An adjustable foot 14 similar to those at the outer ends of the legs 12 is fitted to the bottom of the post 15. On the upper end of the post 15 is mounted a foot rest 16 in the form of an inclined rubber surfaced board 17 on the underside of which is secured a plate 18 carrying a downwardly extending sleeve 19 which fits over the upper end of the post 15. The foot rest 16 is adjustable angularly about the post 15 and is retained in an adjusted angular position by means of a clamping screw 20 which engages in a threaded hole 21 in the wall of the sleeve 19 and is releasably tightened radially against

the post 15. Although in the construction herein described the sleeve 19 is rigidly secured to the plate 18 it will be understood that if desired an adjustable connection may be provided between them so that the inclination of the foot rest 16 may be varied.

Swivelly mounted on the tube 11 of the stand 10 is a round, cushioned seat 22 which has a co-axial pintle 23 secured to its underside which fits in to the bore of the tube 11. The pintle 23 is of composite construction comprising a cylindrical rod 24 over which are fitted and rigidly secured an upper sleeve 25 and a lower sleeve 26. The upper sleeve 25 has a large annular flange 27 around its upper end by which the pintle 23 is secured by screws 28 to the seat 22. A gap 29 is left between the lower end of the upper sleeve 25 and the upper end of the lower sleeve 26. The upper end of the lower sleeve 27 is formed with four notches 30 spaced equi-distantly around the wall of the sleeve 26. The lower portions 31 of the notches 30 are parallel sided but the sides of their upper portions are flared such that the sides of adjacent notches 30 meet at the upper end of the sleeve 26 to form points.

At the upper end of the tube 11 is an outwardly directed annular flange 32 and between this flange 32 and that of the upper sleeve 25 of the pintle 23 is provided a ball race 33 so that the seat 22 can swivel freely with respect to the tube 11. Screwed radially through the wall of the tube 11 are two screws 34 which when the seat 22 is in its normal, standing condition, project at their inner ends into the gap 29 left between the two sleeves 25, 26 of the pintle 23 and do not interfere with swivelling of the seat 22.

When the stool is lifted by the seat 22 the pintle 23 moves axially upwards with respect to the tube 11 so that two of the notches 30 in the upper end of the lower sleeve 26 move into register with the inwardly projecting ends of the screws 34. Upward movement of the pintle 23 with respect to the tube 11 ceases when the ends of the screws 34 engage with the bottom of the parallel sided portions 31 of the notches 30, which parallel sided portions 31 are just wide enough to receive the ends of the screws 34. The engagement of the screws 34 in the notches 30 prevents rotation of the pintle 23 and therefore swivelling of the stand 10 relative to the seat 22.

With the foot rest 16 carried by the stand 10 it will be appreciated that when the stool is lifted and carried by the seat, if the stand is free to swivel relative to the seat, the stool will tilt and the stand swing about the seat thus making the carrying awkward and possibly dangerous as the stand in swinging may strike the person carrying the stool. By preventing such swivelling, carrying and manoeuvring of the stool is facilitated.

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When the stool is stood on the floor again the seat 22 drops under gravity to its normal standing condition in which the gap 29 between the two sleeves 25, 26 of the pintle 23 is opposite the inwardly projecting ends of the screws 34 and the seat 22 is free to swivel again.

In a modification (not shown) of the above described stool there is provided a helical spring which surrounds the upper sleeve 25 of the pintle 23 and which is located between the flange 32 on the tube 11 and an annular thrust washer between which and the flange 27 on the upper sleeve 25 the ball race 33 is provided. The spring urges the seat 22 and the pintle 23 upwards through the thrust washer and the ball race 33 so that in the normal standing condition of the stool the screws 34 are engaged in the notches 30 to prevent the seat swivelling. When a person sits on or otherwise exerts a downward force on the seat 22 the spring is compressed and the pintle 23 moves downwards in the tube 11 so that the gap 29 is opposite the screws 34 and the seat 22 free to swivel.

In an alternative construction as illustrated in Figure 3 the seat 22 of the stool is adjustable for height. In the following description parts which are common to the previously described construction have similar reference numerals. The seat 22 has on its underside a co-axial depending screw-threaded shaft 35 which is secured to the seat 22 by means of a large annular flange 36 at the upper end of the shaft 35 and secured to the seat in a similar manner to that described in the previous embodiment. The shaft 35 engages a nut 37 the underside of which normally abuts the upper end of the tube 11. The nut 37 has a depending skirt 38 which fits into the bore of the tube 11 and has two longitudinally extending, closed-ended slots 39 in the wall of the skirt 38, the slots 39 being diametrically opposite to one another. Through the slots 39 project screws 40 which are screwed radially through the walls of the tube 11 and secure the nut 37 to the tube 11 and prevent it from rotating with respect to the tube 11. A generally cup-shaped member 41 is fitted about the shaft 35 inside the skirt 38 which is pressed over or otherwise turned inwards at its lower end to form an inwardly directed flange 42 to retain the cup-shaped member 41. A spring 43 surrounds the shaft 35 and is located between the underside of the nut 37 and the upper surface of the cup-shaped member 41 and urges the member 41 downwards relative to the nut against the inwardly directed flange 42 of the skirt 38. The shaft 35 is formed with two longitudinally extending key ways 44 which are diametrically opposite to one another and which are engaged by suitably disposed lugs projecting inwardly from the hole in the centre of the cup-shaped

member 41 so that the cup shaped member 41 is keyed for rotation with but axially slidable of the shaft 35. The upstanding circumferential wall of the cup-shaped member 41 is formed with notches 30 opening through its upper edge which are of similar shape and disposition as those formed in the lower sleeve 26 of the previously described construction or of any other suitable shape.

When the stool is standing normally the underside of the nut 37 abuts the upper end of the tube 11 and the skirt 38 of the nut 37 is so positioned in the tube 11 that the screws 40 are disposed near the upper ends of the slots 39 and above the upper edge of the wall of the cup-shaped member 41 and thus do not interfere with the member 41 so that the shaft 35 is freely rotatable in the nut 37 to raise or lower the seat 22. When the stool is lifted by its seat 22 the nut 37 and its skirt 38 move upwards at first relatively to the tube 11 until the bottom ends of the slots 39 abut against the inwardly projecting ends of the screws 40, after which the stand 10 is lifted. When the slots 39 and screws 40 are thus positioned the inner ends of the screws 40 are engaged in the parallel sided portions 31 of the notches 30 formed in the wall of the cup shaped member 41 so that the member 41 cannot turn relative to the tube 11. Since the member 41 is keyed to the shaft 35, the shaft 35 cannot turn relative to the tube 11 and so the stand 10 is restrained from swivelling about the shaft 35 and therefore about the seat 22 while the stool is being carried.

When the stool is placed on the floor again the nut 37 returns under gravity to its normal condition in which the screws 40 are disposed near the upper ends of the slots 39 and clear of the cup-shaped member 41. The spring 43 ensures that the cup-shaped member 41 is maintained in the position relative to the skirt 38, that is against the flange 42, in which it is out of contact with the screws 40 when the stool is in its normal, standing condition, so that the seat 22 is freely rotatable with respect to the stand 10.

WHAT WE CLAIM IS:—

1. A chair or stool which has a seat mounted on a stand for swivelling movement about an axis which is vertical when the stand is on a horizontal surface, the stand being of asymmetric form at least about the vertical axis and provided with restraining means for at least resisting relative swivelling movement between the seat and stand and operative when the chair or stool is lifted by the seat, but not operative when downward pressure is exerted on the seat in use.
2. A chair or stool which has a seat swivel mounted on a stand whose centre of gravity is offset with respect to the swivel axis and which is provided with restraining

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means for at least resisting relative swivelling movement between the seat and stand and operative when the chair or stool is lifted by the seat but not operative when downward pressure is exerted on the seat in use.

3. A chair or stool according to either Claim 1 or Claim 2 in which the restraining means comprise clutch elements on the seat and stand, which elements are separated axially when the chair or stool is in use but are arranged to be engaged by relative axial movement with respect to one another of the seat and stand.

4. A chair or stool according to Claim 3 in which the clutch elements comprise one or more radial pins on the seat or stand engageable by relative longitudinal movement between the seat and stand with recesses or notches formed on the stand or seat or in a member associated with the stand or seat.

5. A chair or stool according to any preceding claim in which the seat has a depending pintle which fits into the bore of a substantially upright tube of the stand and over part of which is secured a sleeve formed with upwardly directed notches engageable on axial movement of the pintle with respect to the tube, with radial pins projecting inwards from the wall of the tube.

6. A chair or stool according to any preceding claim in which the seat is urged upwards relative to the stand by spring action so that the restraining means is engaged when the chair or stool is not occupied or the

seat otherwise forced to its lowest position with respect to the stand.

7. A chair or stool according to either Claim 3 or Claim 4 in which the seat has a depending screw-threaded shaft engaging a nut non-rotatably carried on a substantially upright tube of the stand, the clutch elements being provided on the tube and on a member which is rotatable with but axially slidable on the shaft and is rotatably supported by the nut.

8. A chair or stool which is provided with restraining means for at least resisting relative swivelling motion between the seat and stand substantially as described herein with reference to Figure 2.

9. A chair or stool which is provided with restraining means for at least resisting relative swivelling motion between the seat and stand substantially as described herein with reference to Figure 3.

10. A stool substantially as described herein with reference to and as illustrated in Figures 1 and 2 of the accompanying drawings.

11. A stool substantially as described herein with reference to and as illustrated in Figure 3 of the accompanying drawings.

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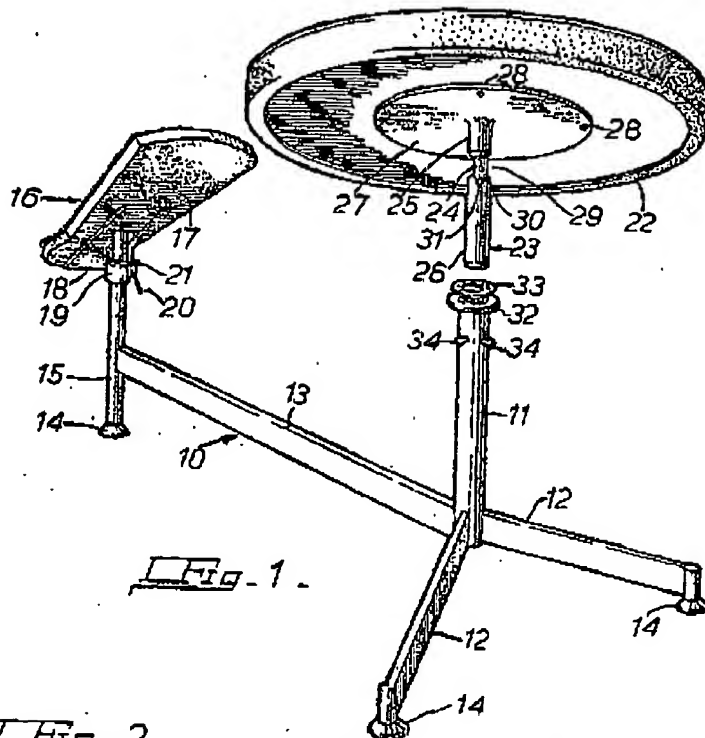


Fig. 1.

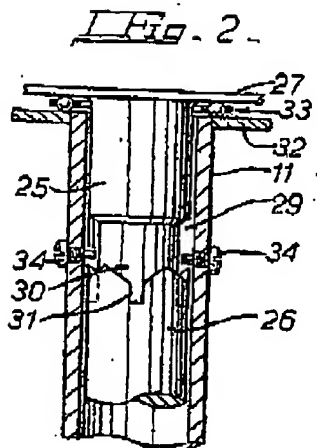


Fig. 2.

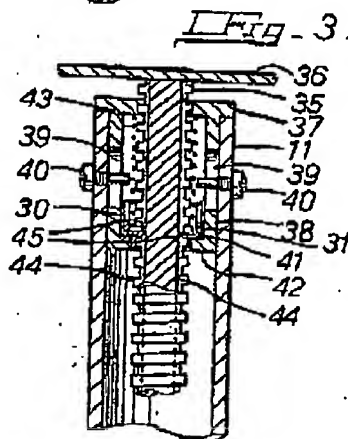


Fig. 3.

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